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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,038

06/13/2008

Ryoichi Shimoi

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EXAMINER

LEONG, JONATHAN G

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,038	<b>Applicant(s)</b> SHIMO ET AL.	
	<b>Examiner</b> JONATHAN G. LEONG	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-7, 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-10 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/19/2010</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8-10 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim limitation "such that the hydrophilic characteristics of the conductive particles of the boundary layer are higher than that of the catalyst layer" represents new matter that does not find support in the original instant specification. While the original instant specification at pages 14-15 disclose that a hydrophilic material is provided on the surface of the carbon particle [of the boundary layer], for example, a liquid or powder material used as an electrolytic membrane, the original instant specification does not disclose the relative hydrophilicity of the catalyst layer compared to the boundary layer. In other words, the original instant specification does not specify the hydrophilicity of the catalyst layer in such a way that would enable one having ordinary skill in the art at the time of the invention to be able to realize the relative hydrophilicity regarding the boundary layer and the catalyst layer.

***Claim Rejections - 35 USC § 102***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 8-10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuno (JP 07-01346, see machine translation).

Regarding claims 8 and 13, Mizuno discloses an electrolytic membrane structure and a fuel cell comprising the same ([0015], Fig. 1), wherein an electrolytic membrane is placed between an electrode in an anode side and an electrode in a cathode side ([0015]/L4-8); the electrolytic membrane comprising a catalyst layer (catalyst reaction layer, [0015]/L4) formed by closing up conductive particles adhered together carrying catalysts on each face, in the anode side and in the cathode side, of the electrolytic membrane, the each face contacts to each of the electrodes ([0015]/L4-10, [0023]/L1-5, Fig. 1); and a boundary layer (fire-resistant layer, [0016]/L3) which is adjacent to the catalyst layer in the anode side on one face of the electrolytic membrane ([0016]/L3-5) and is formed between a portion to be easily contacted with an oxygen gas and the catalyst layer in the anode side (see Fig. 3), wherein the boundary layer is formed by closing up the conductive particles adhered together to which a hydrophilic treatment is carried out (the carbon particles are made into a paste using NAFION<sup>TM</sup> which is the same material used for the membrane of the fuel cell, as such, the carbon particles are inherently granted hydrophilic properties when made into said paste, [0023]/L6-10, [0017]/L6-7). Since the boundary layer of Mizuno comprises conductive particles devoid of catalyst on the surface of said conductive particles ([0023]/L6-7), while, in

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contrast, the catalyst layer of Mizuno comprises conductive particles with catalyst on the surface of said conductive particles ([0023]/L1-2), the conductive particles in said boundary layer inherently contact with more of the hydrophilic material compared with the conductive particles in said catalyst layer containing catalyst particles due to the difference in surface availability of the respective conductive particles. As such, the conductive particles of the boundary layer inherently have higher hydrophilic characteristics than that of the catalyst layer.

Regarding claim 9, Mizuno discloses all of the claim limitations as set forth above. Mizuno further discloses the boundary layer is formed so as to surround a periphery of the catalyst layer, where is easily contacted with the oxygen gas ([0016]/L3-5, Fig. 3).

Regarding claim 10, Mizuno discloses all of the claim limitations as set forth above. Mizuno further discloses the boundary layer is formed between a portion in the vicinity of a penetrating passage by which the oxygen gas is supplied to the cathode side which is easily contacted with the oxygen gas, and the catalyst layer (for example, the boundary layer, subjected to oxygen crossover via the membrane, is formed between the catalyst layer and the membrane which is in the vicinity of the oxygen gas channel, see Fig. 1, [0016]/L3-5, Fig. 3).

### ***Response to Arguments***

5. Applicant's arguments filed 3/30/2010 have been fully considered but they are not persuasive.

Applicant argues that Mizuno does not teach that the hydrophilic characteristics of the conductive particles of the boundary layer are higher than that of the catalyst layer.

The examiner respectfully disagrees and submits that since the boundary layer of Mizuno comprises conductive particles devoid of catalyst on the surface of said conductive particles ([0023]/L6-7), while, in contrast, the catalyst layer of Mizuno comprises conductive particles with catalyst on the surface of said conductive particles ([0023]/L1-2), the conductive particles in said boundary layer inherently contact with more of the hydrophilic material compared with the conductive particles in said catalyst layer containing catalyst particles due to the difference in surface availability of the respective conductive particles. As such, the conductive particles of the boundary layer inherently have higher hydrophilic characteristics than that of the catalyst layer.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN G. LEONG whose telephone number is (571) 270-1292. The examiner can normally be reached on M-Th 8:00 AM - 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571) 272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. G. L./  
Examiner, Art Unit 1795  
5/13/2010

/Basia Ridley/  
Supervisory Patent Examiner, Art Unit 1795